



Manga Comic Influences Snack Selection in Black and Hispanic New York City Youth

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ABSTRACT

Objective: To determine whether a single exposure to a Manga comic (Japanese comic art) with multiple messages promoting fruit intake influenced snack selection in minority urban youth.

Methods: Fifty-seven youth (mean age 10.8 y; 54% female; 74% black/African American) attending after-school programs in Brooklyn, NY participated in a pilot study in which they were randomly assigned to receive the comic or a non-health-related newsletter. After reading their media, participants were offered a snack and could choose from among healthy/unhealthy options. Secondary outcomes included knowledge, self-efficacy, and outcome expectations related to fruit intake and media transportation. Data were analyzed using regression and paired *t* test.

Results: Comic group participants were significantly more likely to choose a healthy snack, compared to the Attention-control group (odds ratio = 3.6, 95% confidence interval: 1.1–12.1, *P* = .04). The Comic group reported increases in self-efficacy (*P* = .04) and greater transportation (immersion into media) (*P* = .006).

Conclusions and Implications: Results suggest Manga comics may be a useful format to promote healthy snack selection in urban minority youth.

Key Words: childhood obesity, nutrition education, health promotion, snack selection, comic book (*J Nutr Educ Behav.* 2014;46:142-147.)

INTRODUCTION

Childhood obesity continues to be a serious public health issue in the US, and the rates are disproportionately higher among Hispanic and non-Hispanic black children.^{1,2} This complex epidemic has been associated with increased consumption of energy-dense foods, including sugar-sweetened beverages,³ while 30% to 45% of US children between the ages of 6 and 18 years do not meet recommended fruit consumption levels.⁴ In addition, snacking accounts for up to 27% of children's daily caloric intake, largely because of an increased proportion of snacking calories from candy, salty snacks, fruit juice, and fruit drinks

over the past 3 decades, and decreased proportion of snacking calories from fresh fruit.⁵ Obesity prevention and weight management interventions targeting snacking behavior in youth may be more effective if high energy-dense foods are replaced with lower energy, nutrient-rich foods such as fruits and vegetables.^{6,7}

Innovative interventions promoting positive dietary behaviors are needed to capture the attention of youth living in a multimedia environment. Narratives, such as entertainment-education and storytelling, may engage today's youth population on health topics.⁸⁻¹⁰ Manga comics, which are Japanese comic art, are a unique form of multimodal

narrative media combining visual images and text. Similar to Western-style comics, Manga comics combine artwork with storytelling. However, Manga are most distinguishable from Western comic books by their wide selection of genres, as well as their detailed artwork that may engage the imagination of readers.¹¹ They are a popular form of entertainment for youth in many countries including the US,¹² and therefore may be a novel platform to promote positive health behaviors in youth. Moreover, the graphics and minimal, concise language used in Manga comics could make them an appealing form of communication for younger populations,^{11,13} including late elementary school-aged children and adolescents.^{10,13,14}

The Transportation-Imagery Model (TIM) explains how Manga comics may contribute to changes in health-related beliefs and behaviors. According to the TIM, persuasion of a story's messages occurs because an individual is "transported" or immersed into the narrative world.¹⁵ The TIM also suggests that images are most impactful when they are embedded in a story, rather than provided in isolation.¹⁵

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Thus, visual images relevant to the story's messages, such as those incorporated in Manga comics, may further influence attitudes and beliefs.

Social cognitive theory (SCT) is a frequently used framework in effective dietary behavior change interventions and also lends explanation to ways in which Manga comics may influence health behavior in youth.^{16,17} Exposure to characters in the storylines may facilitate observational learning and influence health behaviors, particularly when readers relate to the characters in the comics and consider them role models.¹⁸ The development of entertainment-education narratives draws greatly on SCT by using role models to perform new behaviors.^{10,19,20}

Narrative approaches are emerging as promising tools for motivating and supporting health behavior change. A Manga comic with health messages guided by the TIM and SCT may be an effective vehicle to convey health messages and promote healthy behaviors. Thus, the purpose of this study was to determine whether exposure to a Manga comic with messages promoting fruit intake influenced snack selection in school-age, urban minority youth. The authors hypothesized that youth reading a Manga comic promoting fruit consumption would more likely choose fruit as a snack than youth in a control group.

METHODS

Participants

Participants were 57 youth attending 2 after-school programs affiliated with Brooklyn Community Services, a New York City (NYC)-based nonprofit community organization in the summer and fall of 2011; all were eligible to participate, as there were no specific exclusionary criteria. The average age of participants was approximately 11 years (range = 8.3–15.5 y). Nearly 90% of participants were either black/African American or Hispanic and 54% were female. About 80% of the participants reported never having read or looked at Manga comics. The schools in the Brooklyn neighborhoods in which the study was conducted (Crown Heights and East New York) have greater percentages of students

eligible for free lunch (79% and 96%, respectively^{21,22}) compared to the citywide average of 66%.²³

Signed parental consent and student assent were obtained. Upon completion of the intervention, participants received small gifts (eg, stationery, school supplies) valued at \$5. Approval from the Hunter College Institutional Review Board and participating after-school programs were received, with an expedited review.

Study Design

A 2-group, randomized pilot study was conducted in which each participant was assigned to either the Comic or Attention-control group. Participants in the Comic group read a 30-page Manga comic titled *Fight for Your Right to Fruit*, which was developed through extensive formative research. The formative research process consisted of in-depth interviews and focus group discussions, with the intended population, to determine the comic's storyline, concepts, and characters. In addition to health promotion messages embedded in the narrative comic, a 1-page non-narrative was included at the end of the comic to provide additional information about the benefits of fruit and to reinforce the comic's health messages. Although the comic is largely narrative, information was presented in both narrative and non-narrative formats, as entertainment-education research suggests a combination may be necessary for communication to be effective.²⁴ The Attention-control group received a 5-page newsletter and a word search puzzle on a non-health-related topic, specifically ancient Greece and Greek mythology.

Procedures

During Day 1, participants completed a demographic survey and a baseline psychosocial questionnaire. During Day 2 (4–6 d after Day 1), participants were randomly assigned to the Comic or Attention-control group and read their media in a classroom specifically assigned to their group. All youth were allotted up to 60 minutes to read their media. Upon completion of reading their media, the youth were individually escorted to a sepa-

rate room, where they selected 1 snack of their choice. Participants chose their snack 1 at a time in a separate classroom to prevent potential bias caused by social desirability, and they were not informed that their selected snack was an outcome of the study. The snack options consisted of 4 varieties of pre-proportioned fresh fruit and 4 varieties of energy-dense snacks. All snack options were laid out on a single table from which the participants made their selection. The energy-dense snacks were provided in their original snack-size pouches, whereas the fruit selections were packaged into similar-sized clear plastic bags. The table was restocked after each selection to ensure the same number of options was available for each participant. Following their snack selection, participants were escorted back to their assigned classroom, where they then completed their posttest psychosocial questionnaire. Each snack was placed into a brown paper bag and labeled with the participant's name. The snacks were given to the participants once everyone had completed the study.

Measures and Instruments

The primary outcome variable was snack food selection measured by direct observation of participant selection of a healthy or unhealthy snack. The 4 fruit options (oranges, grapes, apples, strawberries) were categorized as "healthy," and the 4 energy-dense snacks (cookies, potato chips, nacho chips, and cheese-filled crackers) were categorized as "unhealthy." Direct observation of snack selection was conducted by the lead researcher, who also escorted each of the subjects to and from his or her classroom. She invited each participant to select a snack of his or her choice. During the selection process, she remained at a distance of approximately 10–15 feet away from the subject and the table where the snack options were displayed to minimize potential selection bias. The type of snack that was selected was noted on a separate form, after each participant was escorted back to their assigned classroom.

Secondary outcome variables included knowledge, self-efficacy, and outcome expectations related to fruit

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